

U.S. ENVIRONMENTAL PROTECTION AGENCY  
 POLLUTION/SITUATION REPORT  
 Columbia Smelting and Refining Works - Removal Polrep  
 Final Removal Polrep



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**  
**Region II**

**Subject:** **POLREP #3**  
**Final POLREP: Closure of Ball Fields 5 through 8 Complete**  
**Columbia Smelting and Refining Works**  
**A24F**  
**Brooklyn, NY**  
**Latitude: 40.6738570 Longitude: -74.0057794**

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**From:** Margaret Gregor, On-Scene Coordinator

**Date:** 9/2/2015

**Reporting Period:** 4/25/2015 through 6/5/2015

**1. Introduction**

**1.1 Background**

**Site Number:** A24F

**Contract Number:**

**D.O. Number:**

**Action Memo Date:**

<b>Response Authority:</b> CERCLA	<b>Response Type:</b> Time-Critical
<b>Response Lead:</b> PRP	<b>Incident Category:</b> Removal Action
<b>NPL Status:</b> Non NPL	<b>Operable Unit:</b>
<b>Mobilization Date:</b> 3/23/2015	<b>Start Date:</b> 3/23/2015
<b>Demob Date:</b> 6/5/2015	<b>Completion Date:</b> 6/5/2015
<b>CERCLIS ID:</b> NYN000206593	<b>RCRIS ID:</b>
<b>ERNS No.:</b>	<b>State Notification:</b>
<b>FPN#:</b>	<b>Reimbursable Account #:</b>

### 1.1.1 Incident Category

Inactive Production Facility

### 1.1.2 Site Description

The Site is the location of a former secondary smelter in a mixed recreational, residential, commercial and industrial area of the Red Hook neighborhood in Brooklyn, New York. It includes the historic footprint of the former Columbia Smelting and Refining Works facility (Columbia), which is currently developed with a baseball/softball field, and the extent of lead-contaminated soil associated with this historic facility. The Site is within Red Hook Park, a 58-acre park owned by the New York City Department of Parks and Recreation (NYC Parks).

Several companies including Columbia Smelting and Refining Works operated a secondary smelting plant at the southeast corner of Lorraine and Hicks Street from the mid-1920s through the late 1930s. Columbia manufactured several types of metals, including white metals and alloys, brass and bronze ingots, soft lead, antimonial lead, Babbitts, solder, type metals, terse metal, Britannia metal, die-cast metal, unbreakable metal and rerun zinc. While the facility was operating, most areas of the block where it was located were undeveloped. The building was demolished in the late 1930s, and the block was developed with four ball fields, identified as Red Hook Ball Fields 5 through 8; the outfields of these ball fields also include Soccer Field 7 and cricket courts. This block is approximately four acres in size. The footprint of the historic facility now includes Ball Field 7 and a MTA bus stop.

NYC Parks learned of the historic Columbia facility in 2012 and collected soil samples from the ball fields on this block in February and March 2012. Lead concentrations up to 2,630 parts per million (ppm) were detected at the fields. In response, NYC Parks added an inch of infield material to each of the four infields and resampled them, hydroseeded the outfields and closed the fields for four to six weeks to increase grass cover, added wood chips to areas with bare soil, and excavated and paved over the Henry Street entrance to the fields which had contained high lead levels.

Also in 2012, the New York State Department of Environmental Conservation (NYSDEC) began independently screening the Site as part of a nationwide portfolio of potential historic smelter sites. After screening the Site, in early 2014 NYSDEC referred it to EPA for review. EPA investigated the Site due to the referral from NYSDEC.

#### 1.1.2.1 Location

The historic smelter facility was addressed as 98 Lorraine Street. The block where the historic smelter was located is bordered by Lorraine, Henry, Bay and Hicks Streets to the north, east, south and west, respectively. This block is surrounded by a large residential public housing complex (Red Hook East Houses) to the north, a community pool (Red Hook Pool) within Red Hook Park to the east, the remainder of Red Hook Park and associated recreational areas to the south, and residences as well as a condemned former industrial plant (a food and cosmetic dye manufacturer) to the west. A daycare center (Bumble Bee Daycare) is present among the residences to the west, and several playgrounds are present within the residential complex to the north. Available wind rose charts indicate that the prevailing winds in the vicinity of the Site are predominately to the southeast, with limited components to the north and southwest.

#### 1.1.2.2 Description of Threat

Data from NYC Parks' 2012 soil sampling indicated that elevated lead levels were present in soil throughout the block which contains the footprint of the historic smelter facility, including lead levels of 999 and 1,600 ppm in the outfields and up to 2,630 ppm in the subsurface of the infields. Although actions taken by NYC Parks in 2012 helped to increase grass cover and in turn reduce direct contact with lead in soil at the fields, EPA observed exposed soil at the ball fields during site visits conducted

since July 2014. Online inspection reports indicated a lack of routine maintenance at the fields in the early 2000s, and it is possible that exposed soil may be periodically present in the outfields or other areas of the block.

Direct contact with the elevated levels of lead within the upper 12 inches of soil may occur through common recreational activities on the fields and when children touch or dig into contaminated soil. Hand washing facilities are not present in the immediate vicinity of the impacted ball fields. Contaminated soil may be ingested or adhere to baseball/softball cleats, other footwear, skin or clothing, and may be tracked off-site. In addition, through the typical heavy usage of the athletic fields, contaminated soil may be disturbed and become airborne and available for inhalation.

Contact with the contaminated soil, or inhalation of contaminated soil particles, may present a health risk to those utilizing the recreational fields, particularly young children. The effects of exposure to lead are the same whether it enters the body through breathing or swallowing. The main target for lead toxicity is the nervous system, both in adults and children. Lead is a cumulative poison where increasing amounts can build up in the body, eventually reaching a point where symptoms and disability occur. Particularly sensitive populations are women of child-bearing age, because of the fetal transfer of lead, and children. Cognitive deficits are associated with fetal and childhood exposure to lead. An increase in blood pressure is the most sensitive, adverse health effect from lead exposure in adults. The Department of Health and Human Services has determined that lead and lead compounds are reasonably anticipated to be human carcinogens based on limited evidence from studies in humans and sufficient evidence from animal studies, and the EPA has determined that lead is a probable human carcinogen.

### **1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results**

EPA began an assessment of the Site in 2014. After a thorough review of historic resources and all relevant background information, in October 2014 EPA collected soil samples from Ball Fields 7 and 8 as well as surrounding areas, all in locations which had not been previously sampled. Results indicated that there were elevated lead levels in the top inch of soil on the block containing Ball Fields 5-8, averaging 635 ppm, but the lead levels were within a typical urban background range and weren't considered to be an immediate health concern. Because higher levels of lead were detected from one inch to a foot below the ground surface, averaging 2,202 ppm, EPA determined that a removal action is required to protect public health in the long term. The pattern of detections of other metals including antimony, tin, arsenic, copper, zinc and iron as well as the lead-antimony and lead-tin relationships in the upper foot of soil at the fields indicated that the contaminants in the upper foot of the ball fields can be attributed to the historic smelter.

In March 2015, EPA completed a second round of soil sampling to delineate the areas with smelter-related contamination on the block which contains the historic smelter facility footprint, and also to screen other downwind athletic fields. Results were received in early April and indicated that lead is present throughout the block which includes the historic facility footprint and Ball Fields 5-8 at levels much higher than expected. Lead levels in the upper foot of soil on these ball fields average 1,580 ppm in the uppermost inch, 2,240 ppm at the 1-6" interval below the ground surface (bgs) and 2,590 ppm at the 6-12" bgs interval. Of 84 samples collected from the ball fields at all depths, 82 (98%) contained lead at levels above the EPA screening level or Removal Management Level (RML) of 400 ppm; in the upper foot, 80% of the detections exceeded 1,200 ppm. Detections of antimony (24 detections), arsenic (34), cobalt (1), iron (13) and thallium (1) also exceeded the respective RMLs.

These fields had been temporarily closed by NYC Parks in March 2015 to allow grass growth, and had been scheduled to open in late April. However, given the high lead levels detected during the March 2015 sampling event, by April 22, 2015, NYC Parks notified elected officials and all park users that Ball Fields 5, 6, 7 and 8 will remain closed until a removal action is completed at the Site.

As part of the March 2015 sampling event, EPA also collected samples from four additional athletic fields and other high-traffic areas located downwind of the historic Columbia facility, beyond Bay and Henry Streets. This included Ball Field 9, Soccer Fields 2 and 6, the areas surrounding Soccer Field 1 (the turf field) and the picnic/spectator area along Bay Street. Levels of lead and other metals in these areas were not similarly elevated to those found in Ball Fields 5-8. The upper inch of soil contained only two lead detections above the RML of 400 ppm, averaging 324 ppm overall in the upper inch. The average lead concentrations were 419 ppm and 534 ppm in the 1-6" bgs and 6-12" bgs intervals, respectively. Elemental correlation analysis suggested that there was a potential, but indeterminate, correlation between lead and antimony as well as other metals (tin, copper and zinc) indicative of smelter-related

emissions in four of the fields south-southeast and southeast of the historic Columbia facility, especially at depth intervals beneath 6" bgs.

Based on the possibility that elevated detections of lead and other metals on these four fields could be Site-related, in late April 2015 EPA sampled these areas (Ball Field 9 and Soccer Fields 1, 2 and 6). Results indicated that elevated lead levels are present on all four fields, but the majority of the elevated detections are present more than one foot beneath the ground surface. Overall, the concentrations of lead are lower than those found at Ball Fields 5-8. Lead levels average below the EPA RML of 400 ppm in the upper six inches of Ball Field 9 and Soccer Field 6, and just above the EPA RML (up to 587 ppm) in the upper six inches of Soccer Field 2 and the areas surrounding Soccer Field 1. From six inches to two feet below the ground surface, lead levels exceeding the EPA RML are present in most depth intervals in all four fields and generally increase with depth. Several elevated detections of antimony, arsenic, cadmium, copper iron, manganese and thallium were also detected throughout the sampling area, but none were within the upper six inches of soil with the exception of cadmium. Cadmium was found in five samples within the upper inch of the areas surrounding Soccer Field 1 ranging from 71 to 290 ppm, compared to its EPA RML of 70 ppm.

EPA analyzed these sampling results and determined that the contaminants concentrations at the fields are not an immediate health concern, and these fields do not need to be closed in the near future. However, a cleanup of the fields is necessary in the long term. Ball Field 9, but not Soccer Fields 1, 2 and 6, was found to include contaminants from the Columbia facility. As a result, an EPA removal action will be conducted at Ball Fields 5, 6, 7, 8 and 9 as part of the Columbia Smelting and Refining Works Site. Currently, NYC Parks is planning to conduct the removal action at these five ball fields under formal EPA oversight. NYC Parks has also indicated that they will remediate Soccer Fields 1, 2 and 6 in the long term (following completion of work at Ball Fields 5 through 9), and will sample soil in all remaining areas of Red Hook Park starting in Fall 2015.

## **2. Current Activities**

### **2.1 Operations Section**

#### **2.1.1 Narrative**

On February 20, 2015, prior to the second round of soil sampling, EPA notified NYC Parks that a removal action is necessary at the Site, and that interim actions are required to minimize the potential for direct contact with soil contaminants until a removal action can be completed. Although initially the interim actions were to include provision and maintenance of hygiene stations at Ball Fields 5-8, the March 2015 sampling results exhibited lead levels high enough to warrant closure of Ball Fields 5-8. On April 13, 2015, NYC Parks agreed to undertake the following interim actions:

- Keep Ball Fields 5-8 closed until completion of the removal action. All chain-link fences, including those at the egress points of the fields, should be secured and maintained. Inspect the fields on a weekly basis (or more frequently as necessary) to ensure that they remain closed and there is no evidence of field usage. Report all deficiencies and corrective actions to the EPA OSC.
- Provide signage regarding the field closures at all entrances to the fields with language agreed upon by EPA.
- Minimize the potential for public exposure to the unpaved areas of the block outside the fence line (along Lorraine and Bay Streets), via access restriction (fencing) and/or cover of these areas, potentially including mulch, landscaping fabric/tarp or other materials, until completion of the removal action.
- Continue to participate, together with EPA, in communications with elected officials, park users, community groups and the general public regarding the above action items, the ongoing investigation, and the proposed long-term removal. Provide a schedule, contacts and materials for communications to user groups.

#### **2.1.2 Response Actions to Date**

Beginning March 23, 2015, as part of the interim actions initially required by EPA, NYC Parks conducted enhanced maintenance on the block which includes Ball Fields 5-8 bordered by Lorraine, Henry, Bay and Hicks Street to address areas where grass cover was sparse. This included spike aeration, addition of topsoil, hydroseeding, overseeding in more established lawn areas, and temporary closure of the fields to allow for establishment of grass cover and/or regrowth. On March 25 and 26, 2015, NYC Parks notified elected officials and park users of the temporary field closures. On March 27, 2015, NYC Parks installed chain link fences eight feet in height at the egress points of the park, in place of snow fences

which had been placed there in fall 2014, to prevent public access. The enhanced maintenance has resulted in a fuller grass cover over the outfields, which will reduce the potential for lead-contaminated dust or storm runoff from the ball fields to migrate to other areas.

On April 20, 2015, both EPA and NYC Parks notified elected officials of the necessity for continued closure of the ball fields impacted by the historic Columbia facility until a permanent removal action can be completed at the Site. On April 21, 2015, EPA finalized a fact sheet discussing the extended ball field closure and additional sampling. On April 21 and 22, 2015, NYC Parks notified park users of the ball field closures. Public information sessions were held on May 4, 2015 and July 22, 2015 to discuss the sampling results and field closures.

During the week of May 11, 2015, NYC Parks completed installation of range fencing along the sidewalk surrounding Ball Fields 5-8, to reduce public exposure to the open grassy areas between the sidewalk and the fence that encloses the ball fields. On June 5, 2015, NYC Parks installed signs at the entrance of the fields to indicate the field closures and the planned removal action. Also in early June, NYC Parks ensured that all gates leading to Ball Fields 5 through 8 are locked with padlocks.

Additionally, NYC Parks submitted a draft checklist to EPA for NYC Parks' routine inspection of the fields along with a description of all monthly maintenance to be conducted as part of the interim measures at the Site. NYC Parks is currently conducting routine maintenance including monthly mowing.

Lastly, based on concerns about elevated cadmium levels in the upper inch of soil surrounding Soccer Field 1, during the week of July 20, 2015, NYC Parks voluntarily covered the grassy areas surrounding the field with several inches of mulch, and fenced off some the unpaved areas which are not utilized frequently.

### **2.1.3 Enforcement Activities, Identity of Potentially Responsible Parties (PRPs)**

No potentially responsible parties related to the historic on-site smelter facility owners or operators have been identified at this time. Red Hook Park is owned and operated by NYC Parks.

### **2.1.4 Progress Metrics**

Enhanced maintenance has been conducted at the ball fields, and the block which contains the historic smelter facility footprint has been closed until the time that a removal action can be completed at the Site. Public access to the fields and grassy areas on this block has been restricted with fencing.

## **2.2 Planning Section**

### **2.2.1 Anticipated Activities**

Aside from routine maintenance, no further activities are anticipated with regards to closure of Ball Fields 5 through 8.

#### **2.2.1.1 Planned Response Activities**

NYC Parks is currently planning to conduct the removal action at Ball Fields 5 through 9 under formal EPA oversight. EPA oversight of maintenance and inspection of these fields until completion of the removal action may be incorporated into an agreement between EPA and NYC Parks for NYC Parks for conducting the removal action.

NYC Parks has also indicated that they will remediate Soccer Fields 1, 2 and 6 in the long term (following completion of work at Ball Fields 5 through 9), and will sample soil in all remaining areas of Red Hook Park starting in fall 2015. Although EPA will not formally oversee these activities since they are unrelated to the historic Columbia facility, NYC Parks has indicated that they will provide updates to EPA.

#### **2.2.1.2 Next Steps**

Once EPA and NYC Parks agree on the scope of work to be conducted for the removal action at Ball Fields 5 through 9, the removal action will be planned and conducted. Because the removal action will involve a large construction project, planning for and completing it will likely take several years. EPA and NYC Parks will provide updates to the public as plans progress.

### **2.2.2 Issues**

There are no issues to report at this time.

## **2.3 Logistics Section**

A logistics section was not activated for this response. No logistical challenges or issues were encountered during this reporting period.

## **2.4 Finance Section**

### **2.4.1 Narrative**

Assessment funding under RST 3 contract was utilized to conduct EPA's assessment; this section is not applicable.

## **2.5 Other Command Staff**

### **2.5.1 Safety Officer**

On January 12, 2015, the Health and Safety Plan for EPA's assessment at the site was finalized. No safety challenges or issues were encountered during this reporting period.

### **2.5.2 Liaison Officer**

The EPA OSC is acting Liaison Officer with local and government officials.

### **2.5.3 Information Officer**

Natalie Loney has been designated as the Community Involvement Coordinator for the site. Elias Rodriguez is the press coordinator. Berry Shore is the liaison for elected officials.

## **3. Participating Entities**

### **3.1 Unified Command**

The EPA OSC and the NYC Parks Commissioner for Brooklyn Borough have been identified as points of contacts for EPA and NYC Parks, respectively; however, a formal Unified Command is not necessary for this response.

### **3.2 Cooperating Agencies**

EPA is coordinating efforts with various entities that have been integral to the assessment and plans for the interim and removal actions, including but not limited to:

- New York City Department of Parks and Recreation
- New York City Department of Law
- New York City Department of Health and Mental Hygiene
- Office of the Mayor of New York City
- New York State Department of Environmental Conservation
- New York State Department of Health

## **4. Personnel On Site**

None.

## **5. Definition of Terms**

bgs:	below the ground surface
EPA:	United States Environmental Protection Agency
OSC:	EPA On-Scene Coordinator
MTA:	Metropolitan Transit Authority
NYC Parks:	New York City Department of Parks and Recreation
NYSDEC:	New York State Department of Environmental Conservation
ppm:	parts per million, equivalent to one milligram per kilogram (mg/kg)
PRP:	Potentially Responsible Parties
RST 3:	EPA Removal Support Team contractors

## **6. Additional sources of information**

#### **6.1 Internet location of additional information/report**

Additional information can be found in the "Documents" section of this website.

For more information on lead exposure, please visit <http://www.atsdr.cdc.gov/toxfaqs/tf.asp?id=93&tid=22>

#### **6.2 Reporting Schedule**

This is the final POLREP for the closure of Ball Fields 5 through 8 and the completion of EPA's soil investigation. POLREPS will be generated for the removal action once field work begins.

#### **7. Situational Reference Materials**

Not applicable.